IN THE CLAIMS:

Please amend the claims of the above-identified application so as to read as follows prior to the further substantive consideration of the above-identified application in response to the concurrently filed Request for Continued Examination:

1. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises voltage applying means for applying a pulse voltage between the nozzle and the substrate, an upper limit voltage of the pulse voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, and

a pre-charge voltage is provided immediately before a rise of the pulse voltage, the pre-charge voltage having a same polarity as that of the upper limit voltage, an absolute value of the pre-charge voltage being set smaller than the minimum voltage to induce discharge.

2. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises voltage applying means for applying a pulse voltage between the nozzle and the substrate, an upper limit voltage of the pulse voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, and

an attenuation facilitating voltage is provided immediately after a fall of the pulse voltage, the attenuation facilitating voltage having an opposite polarity to that of the upper limit voltage.

3. (Withdrawn)An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises voltage applying means for applying a pulse voltage between the nozzle and the substrate, an upper limit voltage of the pulse voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid,

a pre-charge voltage is provided immediately before a rise of the pulse voltage, the pre-charge voltage having a same polarity as that of the upper limit voltage, an absolute value of the pre-charge voltage being set smaller than the minimum voltage to induce discharge, and

an attenuation facilitating voltage is provided immediately after a fall of the pulse voltage, the pre-charge voltage having an opposite polarity to that of the upper limit voltage.

4. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises voltage applying means for applying a pulse voltage between the nozzle and the substrate, an upper limit voltage of the pulse voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid,

a pre-charge voltage is provided immediately before a rise of the pulse voltage, the pre-charge voltage having a same polarity as that of the upper limit voltage, an absolute value of the pre-charge voltage being set smaller than the minimum voltage to induce discharge, and

an attenuation facilitating voltage is provided immediately after a fall of the pulse voltage, the attenuation facilitating voltage having a same polarity as that of the upper limit voltage, an absolute value of the pre-charge voltage being set smaller than the pre-charge voltage.

5. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises voltage applying means for applying a DC voltage between the nozzle and the substrate, the DC voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, and

a pre-charge voltage is provided immediately before starting application of the DC voltage, the pre-charge voltage having a same polarity as that of the DC voltage, an absolute value of the DC voltage being set smaller than the minimum voltage to induce discharge.

6. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises voltage applying means for applying a DC voltage between the nozzle and the substrate, the DC voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, and

an attenuation facilitating voltage is provided immediately after an end of application of the DC voltage, the attenuation facilitating voltage having an opposite polarity to that of the DC voltage.

7. (Withdrawn) The electrostatic suction type fluid discharge device, as set forth in any one of claims 2, 3 and 6, wherein;

an absolute value of the attenuation facilitating voltage is set smaller than the minimum voltage to induce discharge.

8. (Withdrawn) An electrostatic suction type fluid discharge method which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle, the fluid discharge hole, provided in the nozzle, having a diameter ranging from 1 μm to 5 μm,

the method comprising the step of applying a voltage between the nozzle and the substrate, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, wherein a pre-charge voltage is provided immediately before a rise of the voltage, the pre-charge voltage having a same polarity as that of the voltage, an absolute value of the voltage being set smaller than the minimum voltage to induce discharge.

9. (Withdrawn) An electrostatic suction type fluid discharge method which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle onto a substrate opposite to the nozzle,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from 0.01 μm to 25 μm,

the method comprising the step of applying a voltage between the nozzle and the substrate, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, wherein an attenuation facilitating voltage is provided immediately after a fall of the voltage, the attenuation facilitating voltage having an opposite polarity to that of the voltage.

10. (Currently Amended) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle of a discharge head onto a substrate opposite to the nozzle, wherein:

~~the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 15 μm,~~

the electrostatic suction type fluid discharge device comprises line-drawing means for applying a voltage between the nozzle and the substrate while relatively moving the nozzle and the substrate so as to carry out line-drawing, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid,

the line-drawing means controlling a speed of the relative movement so that adjacent ones of discharge pattern are partly overlaid with each other, in accordance with a period of intermittent discharge which is performed at a frequency depending on the voltage and an electric conductivity of the fluid, and

the fluid discharge hole of the nozzle having a diameter ranging from 0.01 μm to 15 μm, and the discharge head discharging the fluid from the nozzle not by a piezo element and/or a thermal element, but by electrostatic suction.

11. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle of a discharge head onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises line-drawing means for applying a voltage between the nozzle and the substrate while relatively moving the nozzle and the substrate so as to carry out line-drawing, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid,

the line-drawing means controlling the voltage so that adjacent ones of discharge pattern are partly overlaid with each other, the discharge pattern being discharged intermittently, and being determined depending on a speed of the relative movement.

12. (Previously Presented) The electrostatic suction type fluid discharge device, as set forth in claim 10, wherein;

the line-drawing means controls the

speed of the relative movement so that the adjacent ones of discharge pattern are overlaid with each other by 0.5 to 1.5 times of a vertical diameter of each pattern, the vertical diameter being a diameter orthogonal to a direction of the relative movement.

13. (Withdrawn) An electrostatic suction type fluid discharge device which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle of a discharge head onto a substrate opposite to the nozzle, wherein:

the fluid discharge hole, provided in the nozzle, has a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge device comprises line-drawing means for applying a voltage between the nozzle and the substrate while relatively moving the nozzle and the substrate so as to carry out line-drawing, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, the line-drawing means carrying out line drawing with a scanning speed and a voltage specified as:

$$V_{in} > 31v + 75$$

where v (mm/sec) denotes the scanning speed, and V_{in} denotes the voltage, provided that an electric conductivity of the fluid is in a range of 10^{-7} - 10^{-9}S/cm.

14. (Withdrawn) An electrostatic suction type fluid discharge method which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle of a discharge head onto a substrate opposite to the nozzle,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge method comprising the step of applying a voltage between the nozzle and the substrate while relatively moving the nozzle and the substrate so as to carry out line-drawing, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, wherein the electrostatic suction type fluid discharge device controls a speed of the relative movement so that adjacent ones of discharge pattern are partly overlaid with each other, in accordance with a period of intermittent discharge which is performed at a frequency depending on the voltage and an electric conductivity of the fluid.

15. (Withdrawn) An electrostatic suction type fluid discharge method which discharges by electrostatic suction a fluid, which is electrically charged by voltage application, from a fluid discharge hole of a nozzle of a discharge head onto a substrate opposite to the nozzle,

the fluid discharge hole, provided in the nozzle, having a diameter ranging from 0.01 μm to 25 μm,

the electrostatic suction type fluid discharge method comprising the step of applying a voltage between the nozzle and the substrate while relatively moving the nozzle and the substrate so as to carry out line-drawing, the voltage being equal to or greater than a minimum voltage to induce discharge, that is a voltage required to start discharge of the fluid, wherein the electrostatic suction type fluid discharge device controls the voltage so that adjacent ones of discharge pattern are partly overlaid with each other, the discharge pattern being discharged intermittently, and being determined depending on a speed of the relative movement.

16. (Withdrawn) An electrostatic suction type fluid discharge device, which applies a drive voltage between a nozzle and a discharge target by drive voltage supply means so as to apply an electric charge to a fluid supplied into the nozzle, and thereby discharges the fluid from a hole of the nozzle to the discharge target,

the hole of the nozzle falling within a range between φ1μm and φ5μm in diameter,

the electrostatic suction type fluid discharge device outputting the drive voltage under a condition: a voltage value = V_0, and an application time = t, which are specified as $130V<V_0[1-\exp(-t/RC)]$ where R expresses electric resistance of the fluid, and C expresses electric capacitance between the fluid in a tip of the nozzle and the discharge target.

17. (Withdrawn) An electrostatic suction type fluid discharge device, which applies a drive voltage between a nozzle and a discharge target by drive voltage supply means so as to apply an electric charge to a fluid supplied into the nozzle, and thereby discharges the fluid from a hole of the nozzle to the discharge target,

the hole of the nozzle falling within a range between φ1μm and φ5μm in diameter,

the electrostatic suction type fluid discharge device outputting the drive voltage under a condition: a voltage value = V_0, and an application time = t, which are specified as:

$$130V<V_0\,[1-\exp(-t/RC)]<250V$$

where R expresses electric resistance of the fluid, and C expresses electric capacitance between the fluid in a tip of the nozzle and the discharge target.

18. (Withdrawn) An electrostatic suction type fluid discharge device, which applies a drive voltage between a nozzle and a discharge target by drive voltage supply means so as to apply an electric charge to a fluid supplied into the nozzle, and thereby discharges the fluid from a hole of the nozzle to the discharge target,

the hole of the nozzle falling within a range between φ1μm and φ5μm in diameter,

the electrostatic suction type fluid discharge device outputting the drive voltage under a condition: a voltage value = V_0, and an application time = t, which are specified as:

$$130V<V_0\,[1-\exp(-t/RC)]<250V$$

$$V_0<250V$$

where R expresses electric resistance of the fluid, and C expresses electric capacitance between the fluid in a tip of the nozzle and the discharge target.

19. (Withdrawn) An electrostatic suction type fluid discharge device, which applies a drive voltage between a nozzle and a discharge target by drive voltage supply means so as to apply an electric charge to a fluid supplied into the nozzle, and thereby discharges the fluid from a hole of the nozzle to the discharge target,

the hole of the nozzle falling within a range between φ1μm and φ5μm in diameter,

the electrostatic suction type fluid discharge device is arranged to satisfy:

$$VH = -0.001X^2+0.44X+125$$
$$VL = -0.0013X^2+0.69X+160$$

where X expresses a distance between the nozzle and the discharge target, and VH and VL express maximum and minimum values of discharge start voltage at which discharge of the fluid from the nozzle is started, respectively.

20. (Withdrawn) An electrostatic suction type fluid discharge method, which applies a drive voltage between a nozzle and a discharge target so as to apply an electric charge to a fluid supplied into the nozzle, and thereby discharges the fluid from a hole of the nozzle to the discharge target, wherein:

the hole of the nozzle falls within a range between φ1μm and φ5μm in diameter,

the method outputting the drive voltage under a condition: a voltage value = V_0, and an application time = t, which are specified as:

$$130V<V_0\,[1-\exp(-t/RC)]$$

where R expresses electric resistance of the fluid, and C expresses electric capacitance between the fluid in a tip of the nozzle and the discharge target.